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ABSTRACT

Illinois State University's teacher education program's professional sequence is organized around separate teaching skills, each of which relates to student outcomes in classrooms. Initially, a group of University High (U-High) Laboratory School supervisors was formed to develop clinical experiences which would enable prospective teachers to integrate these separate teaching skills and practice using them in the high school setting. The first stage in certification procedure development consisted of developing a teaching performance test. The U-High Academic Learning Time (ALT) model is based upon an interactive curriculum theory which enables teachers to achieve the benefits of syntheses. Designed to help prospective teachers analyze content and build unit-sized instructional sequences in which subject matter acquisition is complemented by the application of subject matter to tasks of personal and social significance, the BTES (Beginning Teacher Evaluation Study)/ALT model consists of five teaching skills: diagnosis, prescription, presentation, monitoring, and feedback. This paper describes the model in detail, analyzes the BTES, and describes how student time on task measures are being used to certify teachers at U-High. Also provided are a description of low, mid, and high levels of knowledge use in the classroom and education students' responses to the program. (JMK)

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The Use of Student Time Task Measures In Pre Student Teaching Clinical Experiences: A Panel Presentation

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THE USE OF STUDENT TIME ON TASK MEASURES

IN

PRE-STUDENT TEACHING CLINICAL EXPERIENCES

Like most CBTE programs developed in the late 1960s and early 1970s, the Professional Sequence at ISU is organized around separate teaching skills each of which is believed to be related to student outcomes in classrooms. Initially a group of University High Laboratory School supervisors was formed to develop clinical experiences which would enable prospective teachers to integrate these separate teaching skills and practice using them in a high school setting. The first stage in the development of the certification procedures to be described in this panel presentation consisted of a teaching performance test similar to the ones developed at UCLA by Popham and his associates. In this procedure student outcomes on a content relevant test is used to assess teacher readiness for certification. This procedure was modified and adopted by the Professional Sequence, and made part of its teacher certification requirements early in the 1970s.

At the conclusion of stage one, the group continued to seek additional ways to increase the validity of its certification requirements. This effort resulted in the rejection of lesson-sized instructional sequences as an appropriate length of time for assessing readiness for teacher certification. The dominant rationale for rejecting lesson-sized instructional sequences was the belief that teacher certification should be based upon evidence that prospective teachers were able to exceed low-levels of knowledge use in classrooms. Achieving high-levels of knowledge use in classrooms required a longer period of allocated time. Consequently, the U-High study group decided that a unit-sized

instructional sequence lasting three weeks should become the minimum acceptable length of time to assess the ability of prospective teachers to achieve high levels of knowledge use in classrooms.

This shift from lesson to unit-sized instructional sequences was followed by a series of changes made to further increase the validity of U-High certification requirements. Stage three in the development of these procedures grew out of the Beginning Teacher Evaluation Study (BTES) reported in the literature during the late 1970s. In this study student time on task was observed to be related to student outcomes. As a result of these findings the U-High group changed as the primary focus of its assessment procedures from teacher behavior to student time on task (measured in minutes). Student time on task measures are now used at U-High to replace separate teaching skills as the organizing focus of its pre-student teaching clinical experiences.

The panel presentation will consist of an analysis of the BTES, and a description of how student time on task measures are being used to certify teachers at U-High. Members of the panel will report on the results being obtained at U-High using these procedures. Barb Blunk will describe results with low-levels of knowledge use in classrooms. Eileen Kanzler will describe high-level results. Kathy Malone-Clesson will describe mid-level results. Students Andres Andreatta, Susan Johnson, and Carla Briggs currently enrolled in the program have been invited to share their reactions.

The Beginning Teacher Evaluation Study: An Analysis

The BTES differs from traditional research on teaching in several ways. Whereas earlier research focused classroom observations on teacher behaviors, the BTES focused on student behaviors. Unlike earlier research on teacher behavior, the BTES found relationships between observations of student behavior and student outcomes measures. It was found that teachers with the same time

allocated to the study of a subject differed significantly on the amount of time students in their classrooms actually engaged in learning activities, and that teachers with more engaged time had significantly higher student outcomes.

Secondly, whereas earlier research attempted to conceptualize teaching into subordinate parts, the BTES conceptualized student time on task into subordinate component parts. Student time on task was broken down into allocated time, engaged time, and academic learning time. These categories represent a gradual refinement of the time variable. Allocated time is a measure of the time teachers schedule for different subjects or activities; engaged time is that period in which students engage in or attend to instructional tasks; and academic learning time is the time students engage in instructional tasks at which they can be successful. Academic learning time incorporates allocated and engaged time and adds the element of success rate. Four recent comprehensive reviews of research on the time variable report that academic learning time shows the strongest relationship to measures of student achievement (Anderson, 1980; Borg, 1980; Fisher, 1980; Stalling, 1980). These findings prompted us to use academic learning time (ALT) as a measure of teacher effectiveness in our pre-student teaching clinical experiences.

Third, whereas earlier research on teaching attempted to derive a teaching model from observations of what teachers are doing in classrooms, the BTES formulated a model of what teachers should be doing in classrooms to increase academic learning time. This BTES/ALT model consists of five teaching skills: diagnosis, prescription, presentation, monitoring, and feedback. These behaviors are believed to be related to increases in academic learning time. It should be pointed out, however, this latter assumption of the BTES has not been demonstrated. While helping prospective teachers to increase ALT in classroom is a major objective of the U-High study, it is recognized that this objective is not without shortcomings or dangers.

Shortcomings in the BTES/ALT Model

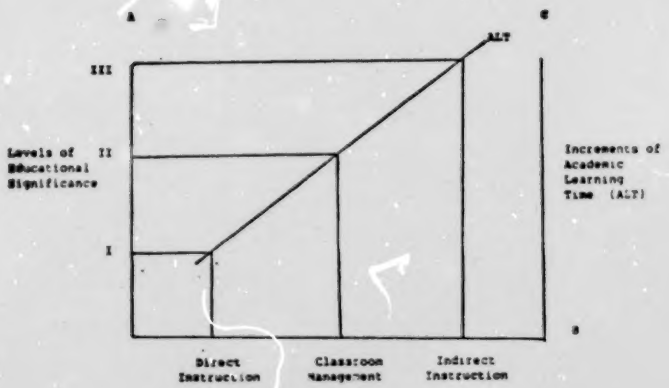
The major shortcoming with the BTES/ALT model is probably its success rate component. Obviously pupils do not learn what is to difficult for them, nor do they stay engaged when they are experiencing failure. Emphasizing success rate, however, can lead to setting minimum objectives that require low-order learning and that ultimately becomes unchallenging to students. The same misgivings that educators express about competency based instruction, that objectives become mechanistic, test driven and divorced from the real world (Hyman and Cohen, 1979) have been leveled at academic learning time. McNamara (1981) in a critique of academic learning research laments an "overconcern with static educational objectives" and says, "the result of this sort of research is an enervating, artificial curriculum in which highly structured, mechanical learning is geared to rigid, formal testing (p.295)." Kepler (1980) takes issue with the narrow view of teaching proposed in the BTES/ALT model. Kepler points out that the model consists of direct instruction teaching techniques geared to producing high success rates in classrooms and that the exclusive use of direct techniques result in passive learners which limit the possibility of achieving high order objectives.

The U-High/ALT Model

Our objective is to train prospective teachers to increase ALT in classrooms, but to ensure that these increases do not result in the reduction of levels of educational significance in classrooms. The principle procedure we used to attain this objective was to view the BTES/ALT model from the context of curriculum theory and research. The function of curriculum theory has always been to find ways of increasing the significance of subject matter and its use in schools. Curriculum theorists believe that what is taught in schools, and the rationale for teaching it will determine how it is taught, and how well

students will learn. Generally curriculum theories have been divided into subject-centered, child-centered, and social-centered categories. Since the 1940s however, most curriculum theorists have tried to develop an interactive curriculum theory which would enable teachers to achieve the benefits of a syntheses. The U-High/ALT model is based upon this approach to curriculum development. It is designed to help prospective teachers to analyze content and build unit-sized instructional sequences in which subject matter acquisition is complemented by the application of subject matter to tasks of personal and social significance.

Figure 1
U-HIGH/ALT MODEL
(R. Walmon, 1983)



The U-High model is displayed in Figure 1. Training in the use of this model is based on the rationales found in various curriculum theories for teaching subject matter in schools. It begins with an analysis of a unit-sized body of content which is assigned to students by U-High supervisors at the beginning of the semester, into three levels of educational significance. These levels are indicated in Figure 1 by line A. Each level has a different

rationale for teaching subject matter in schools. These are:

1. An intellectual rationale which dictates that subject matter be selected and organized on the basis of its importance to future learning in the discipline;

2. A personal rationale which dictates that subject matter be selected on the basis of its relevance to learners needs and interests;

3. A social rationale which dictates that subject matter be selected on the basis of its potential for resolving social issues.

In this model, subject matter selected on the basis of its importance to the discipline is treated as the lowest level of educational significance and subject matter selected on the basis of social utility as the highest.

The content analysis procedures require that prospective teachers build a knowledge structure comprising the three levels of educational significance. The lowest level of knowledge structure involves having prospective teachers select the most general ideas in their textbook chapter, organize the ideas around a general principle that subsumes and relates other ideas found in the chapter. The second level of the knowledge structure involves having prospective teachers identify problems of a personal nature that might be solved by utilizing the major ideas of the textbook chapter and having them identify problem solving techniques that would be used by people educated in the discipline. The highest level of the knowledge structure involves having prospective teachers identify issues of social significance that could be addressed using the subject matter and modes of thought acquired at lower levels.

Following the content analysis, subjects in the experimental treatment were taught to use the Taxonomy of Educational Objectives to formulate behavioral objectives that corresponded to the levels of educational significance outlined in their knowledge structures. The categories of objectives specified in the

taxonomy blend well with the levels of educational significance. Taxonomy objectives at the knowledge-comprehension categories are congruent with the lowest level of the U-High/ALT model since objectives at this level are most appropriate to the goal of acquiring subject matter. Taxonomy objective test items in the knowledge-comprehension categories are also used to illustrate tasks which students would be expected to perform in classrooms during Level I learning activities. Similar uses of the taxonomy are made for Levels II and III in the U-High/ALT model. At Level II the application-analysis categories are used as most appropriate to working on tasks of personal significance. At the highest level the categories synthesis-evaluation are used to address issues of social significance.

In the next phase of their content analysis (indicated by line B on Figure 1), prospective teachers planned instructional procedures to correspond to the levels of educational significance reflected in behavioral objectives. At the lowest level, during which subject matter is being acquired, techniques of direct instruction were emphasized. Direct instruction gives teachers the maximum control over classroom interaction and this control is seen as necessary in initial stages of instruction to insure pupil attention and successful acquisition. At the second level, during which subject matter is applied to problems of personal significance, techniques of classroom management were emphasized. Management techniques, such as self-pacing and individualized learning packages, lessen direct teacher control while maximizing pupil-content interactions. At this level pupil interest may be expected to insure engagement and the successful acquisition of knowledge at the previous level to insure pupil success. At the highest level, during which subject matter is used to address social issues, indirect instructional techniques were emphasized. Indirect instructional techniques, such as supportiveness, acting as a resource

person or counseling students about difficulties, represent the least teacher control while maximizing pupil interaction with high-order content. At this level, continued pupil interest may be expected to insure engagement and successful application of knowledge at the previous level to insure pupil success.

Finally, line C in Figure 1 represents academic learning time (ALT). ALT in the model is a function of the teacher's ability to identify levels of educational significance through content analysis and to vary teaching and management strategies as appropriate to these levels of significance.

Following their content analysis, subjects are given opportunities to test the validity of their analyses by engaging in peer microteaching experiences. At the conclusion of microteaching, subjects in the experimental treatment return to U-High classrooms to teach their units to high school pupils. U-High pupils are randomly assigned to subjects. Subjects work with their high school pupils in 50-minute sessions, five days a week for three weeks. At the end of this time, subjects submit student achievement scores obtained by a final exam covering content acquisition and a pupil project. Records of ALT are also submitted. These student outcomes are used by U-High supervisors to assign grades in these clinical experiences. Members of the panel will now describe results obtained by subjects in the experimental treatment.

Summary - Panel Discussion

The panel discussion focused on the experiences of three University High Laboratory School teachers who had participated in the ALT research during the last few years. Ms. Barbara Blunk, a Business teacher, offered her perceptions of prospective teachers functioning at the lower order of the typology. Since the pre-student teachers are frequently teaching out of their particular discipline she selects insurance as the topic in Business Education which is most likely to be personally relevant and significant. The low order level of instruction generally consumes about one week and it is during this time that the basic material on the topic is taught. Lecture, recitation, question/answer, and seat work are the principal teaching methods in this teacher directed segment. One or two short quizzes to evaluate student comprehension and assesss instructional skills may also be given. There is little if any Academic Learning Time accrued during the first week. By the end of the first week of instruction each prospective teacher has composed twenty-five multiple choice questions over the material which, together with the supervising teacher's items, comprises a pool of test questions from which the final exam is compiled. The prospective teacher does not see the final exam until the actual testing date.

Ms. Blunk believed that the prospective teachers who are most effective are the ones who have internalized the unit information before beginning instruction and who have made important decisions on how to break the material down into manageable subtopics. Organization of the data may be in terms of importance, popularity, e.g., auto insurance, difficulty or textbook sequence. They feel comfortable with the information and do not depend totally on the textbook or

detailed written notes, but rather have formulated a lesson plan outlining principal points. Classroom management also becomes a vital consideration in the early days of the first week, Ms. Blunk maintained, and prospective teachers who formally introduce themselves, stand while teaching, are able to readily identify students by name and insist on order in the classroom, have the highest potential for success. Prospective teachers who are not well prepared and who continually depend on the supervising teacher for direction "die" in the first week, she continued. On the other hand those who are well prepared, show enthusiasm, seek advice and suggestions from the supervising teacher on occasion, and who have the ability "to read the kids" generally achieve high satisfaction as well as high scores on student tests. Blunk suggested that in future experiments a careful record be taken of tactics, procedures and activities that work in order to improve teaching methods at this level of instruction.

The primary emphasis of Ms. Malone-Clesson was a description of the progression in an English class from lower to higher order thinking, and how prospective teachers worked to increase student time on taks. She reviewed the functional definition of Academic Learning Time as time students spend independent of a teacher with materials of instruction with which they are successful. To measure ALT increments a daily record is kept separately by the prospective teacher and a reliable student in each group designated as pupil proctor. Their time estimates must nearly coincide or a reclarification of the concept becomes necessary. As prospective teachers move simultaneously to higher order levels of thinking and increased time on task the resultant graph becomes fairly predictable:

Week #1 0 - 20% ALT

Week #2 20 - 40% ALT

Week #3 approx. 60% ALT

Malone-Clesson observed that successful prospective teachers demonstrated some common characteristics: They are knowledgeable beyond the textbook and come to the clinical experience armed with outside materials voluntarily. They have used their introductory weeks to familiarize themselves with the information and with the students. They appear excited about what they have discovered and the material is new and fresh. Frequently they seem to be in the role of explorers along with the students they are teaching. By the second week the prospective teachers instinctively test over the material presented and use the results for diagnostic purposes and to insure adequate basal information before proceeding to the next level. With rate exception, Malone-Clesson continued, the prospective teachers demonstrate a high level of expectation for the high school students. Because of the small group the prospective teachers are able to develop a positive relationship with their students, help students to believe in their abilities and establish confidence in their ideas. By way of example the supervising teacher described an activity of a prospective teacher who tapped the talents of a Theatre major friend of hers to enact an original student poem. The result was most gratifying to the young student-poet who saw her poem worthy of interpretation. Characteristic of the second phase of the sequence was the search, find, share, format in which the pre-student teacher joined students in inquiry research in the library and students tested ideas in preparation for the project of the third week.

Malone-Clesson interviewed three prospective teachers on their perceptions of the clinical experience. They related their initial high anxieties and low expectations for the sequence. They recalled asking for more direction and guidelines and sought reassurance and reinforcement from the supervising teacher. All three prospective teachers praised the value of teaching in the real-life

situation. When questioned on the motivational aspect one pre-student teacher in a Biology class believed that the choice of main topic - in this case, animals - was the key factor in maintaining high interest throughout the three levels of the sequence. Many students had owned their own pets or had direct experience with dogs, cats, fish, etc. In moving from one phylum to another high interest was maintained with knowledge of each new animal and curiosity was sustained as each student reported on his/her investigations and research. With each higher level of thinking motivation appeared to increase. In an assessment of the teaching model a prospective teacher singled out the advantage of handling a block of material early in the semester, the opportunity to accomplish additional research on the material and the necessity of preparing daily lesson plans in a real-life teaching environment. He discovered that he "could not conquer China in three weeks." The clinical experience afforded him the chance to judge both the material to be taught and time allotments for instruction of that material.

The higher order phase of the sequence, the theme of Dr. Kanzler's comments, is the culmination of the teaching experience at U High and seeks achievment of student directed learning at the upper levels of knowledge with success and social or personal significance. In striving for that goal prospective teachers become totally immersed in the clinical experience. Most of them make noticeable gains in self confidence; they learn from their mistakes; they become self analytical and self directed; there is a sense of purpose and dedication. The clinical experience for these pre-student teachers is the culmination of a semester's work. The U High students generally welcome the change of pace; they like the small group patterns and the "fresh face behind the desk." Unfortunately, some students

consider this phase a convenient one to relax and take things easy. Not all pupils utilize the allotted time as engaged time; they may chat with their friends or occupy themselves inappropriately. The presumption exists, Kanzler noted, that high school students want to be self directed and will use time efficiently and effectively. This is not always the case and particularly in this episode, confounds accurate measurement of ALT. Other students complain about teaching methods and delivery of the prospective teacher. They worry about covering all the material and they are uncertain about the project goals and requirements. They ask for more advice from both the prospective and supervising teachers. However, the majority of students voluntarily cooperate with the pre-student teachers, strive to change their learning activities as they move to each level and all attempt the final project. Kanzler contended that especially in the Social Studies, discussion, problem solving, analysis and self directed reports are not new. What may be new and different about this clinical experience is that these strategies are planned, sequential and integrated.

Certain pre-conditions have already been established which help to germinate ideas for the final project. Prospective teachers have worked hard to teach a rather large body of information - a unit of 50-60 pages - in a relatively short period of time and they have become very involved with the material. They are learning as they are teaching. Both prospective teachers and students are aware they are expected to move from one level to another and they see the logic and relevance of the concept, at least at face value. Tactics and strategies may change as needs arise. Many students welcome the prospect of doing "outside work." The pre-student teacher also possesses a guideline of criteria for the project and the aim at this point is to fit these criteria to the subject matter.

Most final projects are in written format - an essay, a report, a design or

a plan. Students compose something or they make and defend a judgment about an event or a character; they evaluate an action or a decision. All projects require library investigation and/or outside research. Perhaps 20% are more original e.g., interviews in which pupils must compose appropriate questions, categorize data and make warranted conclusions; a graphic presentation illustrating a theory or an insight; a musical or artistic program. Few pupils see the project as cumulative; nor do all prospective teachers look for the cumulative result. Many reports, plans and essays are superficial and do not capitalize on previously learned data; they appear to lack critical and reflective thought. One prospective teacher posed the project problem: If the Civil War had not occurred how would your life have been different? Most pupils considered only slavery and did not deal with either the complexities of slavery or other issues which led to the Civil War and needed to be resolved in any evolution of the problem. On the other hand a few students were cognizant of the multi-faceted issues of the war and worked to deal with them in their project. In a Business class the problem was to design an insurance policy against a risk not presently insured. Two students devised policies on an unborn fetus and a married couple against divorce. Some prospective teachers are too vague in formulating requirements; others adopt the "tabular rasa" approach and ask for a reinvention of the wheel. Perhaps one-third give too much direction; 10-20% give little or no guidance after the initial project is established.

Pupils are encouraged to use research, inquiry, investigative and problem solving skills; they are expected to be original and self directed. Their uncertainty frequently becomes determination and for some engagement and involvement equals success. Considerable interaction occurs between the prospective teacher and their students with suggestions, hints, clues and counseling. This

last segment of the sequence affords the pre-student teacher the opportunity to re-evaluate the project in their own minds, honing and refining ideas as the process continues. Few pupils achieve the actual goal of a project at the higher order of knowledge; all make the attempt, however, and to some extent are successful and begin to approach the level.

Kanzler concluded by saying that she believed the procedure of moving from lower to higher levels of the knowledge structure conceptualized the classical meaning of education, i.e., "educo" to lead out of ignorance. The prospective teacher becomes not merely the dispenser of facts and dates but a catalyst and provacateur of learning. What emerges is a learning trilogy - an informational base, an internalization of that information and at the summit an approach to wisdom.

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